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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,719	10/11/2005	Akiko Sasaki	ASAIN0168	6812

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EXAMINER	
MILLER, MICHAEL G	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,719	SASAKI ET AL.	
	Examiner	Art Unit	
	MICHAEL G. MILLER	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2) The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3) This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4) Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sangeeta et al (U.S. Patent 6,485,780, hereinafter '780) in view of Milaniak et al

(U.S. Patent 5,366,765, hereinafter '765) and Pfaendtner et al (U. S. Patent 6,497,920, hereinafter '920).

5) With regard to Claim 1, '780 teaches a method for local application of diffusion aluminide coating on areas of a metal component to be exposed to a high temperature gas, comprising:

a) A component preparation step of exposing local areas (damaged areas of an existing coating) of a base material of a metal component to be coated, and roughening a surface of the base material to a desired surface roughness ('780 Column 9 Lines 44-47; the grit-blasting will both remove the coating and roughen the surface);

b) A slurry preparation step of preparing a coating slurry (Column 9 Lines 47-54);

c) An applying/drying step of applying the coating slurry to the local areas of the metal component, and then drying the local areas (Column 9 Lines 55-64);

d) A packing step of packing the metal component in a heat-resistant container filled with alumina powder (Column 7 Line 65 – Column 8 Line 9, taught as a known step prior to a diffusion treatment);

e) A diffusion treatment step of retaining the heat-resistant container at high temperature in an inert atmosphere to diffuse aluminum onto the surface of the metal component (Column 9 Lines 64-65); and

f) A cleaning step of taking out the metal component from the heat resistant container (It is known in the art to take the treated part out of the pack diffusion container when the pack diffusion is complete).

g) '780 is silent as to the following limitations:

i) The slurry of b) above does not contain a halide activator, a water soluble organic binder, and powder of an aluminum-containing intermetallic compound (though it does contain an aluminum source).

ii) The cleaning step does not include removing a slag from the surface of the metal component.

h) '765 teaches that an aluminide coating can be added to a surface using particulate aluminum, an inert ceramic particulate, a halide activator and an aqueous base dispersant including a water soluble organic binder ('765 Column 2 Lines 25-29 and Column 4 Lines 17-21).

i) Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have combined the method of '780 with the composition of '765 because '780 wants to deposit an aluminide coating and '765 teaches a composition capable of doing such.

j) Neither '780 nor '765 explicitly teach an aluminum-containing intermetallic compound.

k) '920 teaches the use of titanium-aluminum alloys in the course of providing an aluminide coating to a surface ('920 Column 2 Lines 50-56). $TiAl_3$ is a known alloy of this type.

l) The selection of a known material based on its suitability for its intended use has been shown to support a *prima facie* obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

m) '920 further teaches removing particulate matter from the surface of the part after it is removed from the protective overwrap provided during the heat treatment ('920 Column 6 Lines 43-50). This removal is performed with air or water and is performed to prepare the part for further processing.

6) Claim 2 is rejected on the same grounds as Claim 1, as the suitability of titanium-aluminum alloys is known in the art for the intended purpose and selection of a known material based on its suitability for its intended use has been shown to support a *prima facie* obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp*., 325 U.S. 327, 65 USPQ 297 (1945).

7) With regard to Claim 3, '780/'765/'920 teaches a local application method of diffusion aluminide coating according to claim 2, wherein:
   a) The coating slurry is prepared using AlF_3 as the halide generator ('765 Column 2 Line 67 - Column 3 Line 4), and
   b) Mixing the coating source and the activator at a weight ratio of 93 to 97 : 3 to 7 ('765 Column 4 Lines 17-21, wherein the ratio of 0.1% - 10% aluminum source and 0.1% - 10% halide activator gives all ratios from 1:100 to 100:1, which encompasses the claimed range)
   c) While using the water soluble organic binder ('765 Column 4 Lines 17-21).

8) With regard to Claim 4, '780/'765/'920 teaches: A method for local application of diffusion aluminide coating according to claim 1, wherein:
   a) In the applying/drying step, the applying and the drying are repeated alternately ('765 Column 5 Lines 39 – 54 and Column 6 Lines 28 – 61).

b) '780/'765/'920 are silent as to the final thickness of the slurry. However, the thickness of the slurry is a result-effective variable with regard to the degree of aluminiding that occurs (the thickness of the slurry determines the amount of aluminide available to diffuse into the substrate).

c) '780/'765/920 discloses the claimed invention except for the final thickness of the slurry before the diffusion step. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have adjusted this value based on the desired final thickness of coating, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9) With regard to Claim 5, '780/'765/'920 teaches: A method for local application of diffusion aluminide coating according to claim 1, wherein:

a) In the diffusion treatment step, the heat-resistant container is retained at 1900 to 2000^{o}F (about 1038 to 1094^{o}C) for about 2 to 9 hours ('765 Column 2 Lines 38 – 41, teaching a range which encompasses the claimed temperature and overlaps the claimed range).

10) With regard to Claim 6, '780/'765/'920 teaches: A method for local application of diffusion aluminide coating according to claim 1, wherein:

a) The metal component is a blade, vane, shroud or combustor of a gas turbine ('780 Column 3 Lines 7-10 teaches a jet engine blade, vane and combustor liner).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL G. MILLER whose telephone number is (571)270-1861. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MGM

/Michael G. Miller/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792